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Los Alamos NATIONAL LABORATORY

Multi-Probe Campaign FY23 Omega EP Shot Request

Steven H. Batha

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Abstract

- **The goal of the Multi-Probe experimental campaign is to assess the feasibility of using multiple probe types (x ray, proton, neutron, and electron) in future LANL radiographic facilities. The experiments proposed for FY23 will begin developing a neutron source for radiography at Omega EP.**

MultiProbe-23 A&B will develop a neutron source on Omega EP for radiography

- Purpose: Develop neutron source for radiography
- Motivation: Laser-based sources offer the possibility of probing material with different species such as x-rays, proton and neutrons simultaneously. This is a joint Campaign 3 and 10 project.
- Goal:
  - 23A: Optimize deuteron-generating foil
  - 23B: Use Be converter to produce neutrons
- PI/: S.H. Batha, D. Broughton, A. Favalli, C. K. Huang, T. Schmidt, R. Reinovsky
- Facility: Omega EP

Summary Shot Table	Q1FY3	Q2FY23	Q3FY23	Q4FY23
Total shots		12		12

OMEGA EP: Laser and diagnostic configuration

We will alternate BL and SL to increase shot rate
23B, we will bring LANL bubble detectors & He3 detector:
both are outside chamber

Laser configuration

Beam #	Beam shape/DPP	IR/UV	Energy	Pulse duration/ Shape	Lens position
Beam 1 (SL)	Square EP	IR	MAX	BC	best focus
Beam 2 (BL)	Square EP	IR	MAX	BC	best focus
Beam 3	Not used	UV			best focus
Not used	DPP 750	UV			best focus

Diag configuration

Diagnostic	TIM	priority
NTA with dual arm (RCF/IP stack)	TIM14	1
nTOF		1

VisRad target pictures for MP 23A & 23B use single beam irradiation of foil; will produce neutrons in 23B

- We will alternate BL and SL to increase shot rate
- 22A will vary foil parameters